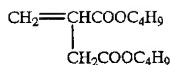


EAST search Notes (cont)

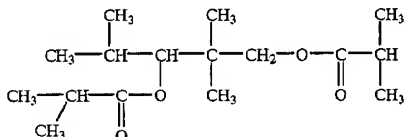
US 6,495,071 B1

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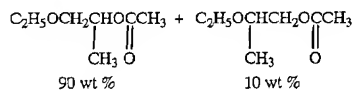
(23) 2,2,4-Trimethyl-1,3-pentanediol diisobutyrate (trade name: Kyowanol D)

($\sigma=6.24 \times 10^{-9}$ S/m, $\eta=4.0 \times 10^{-3}$ Pa·s)



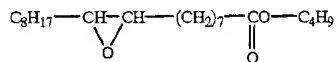
(26) Propylene glycol ethyl ether acetate (trade name: BP-Ethoxypropyl Acetate)

($\sigma=3.10 \times 10^{-8}$ S/m, $\eta=5.0 \times 10^{-4}$ Pa·s)



(27) 9,10-Epoxy butyl stearate (trade name: Sansocizer E-4030)

($\sigma=5.46 \times 10^{-9}$ S/m, $\eta=2.0 \times 10^{-2}$ Pa·s)



(28) Tetrahydrophthalic acid dioctyl ether (trade name: Sansocizer DOTP)

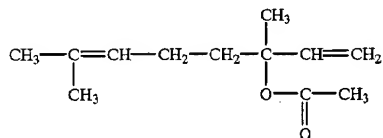
($\sigma=6.20 \times 10^{-10}$ S/m, $\eta=4.0 \times 10^{-2}$ Pa·s)

(33) 1-Ethoxy-2-acetoxyp propane

($\sigma=4.41 \times 10^{-7}$ S/m, $\eta=4.0 \times 10^{-4}$ Pa·s)

(35) Linalyl acetate

($\sigma=1.82 \times 10^{-9}$ S/m, $\eta=1.3 \times 10^{-3}$ Pa·s)



(36) Dibutyl decanedioate

($\sigma=1.35 \times 10^{-9}$ S/m, $\eta=7.0 \times 10^{-3}$ Pa·s)

When a combination of plural compounds is used as the electro-sensitive movable fluid of the invention, the conductivity and the viscosity of a mixture of the plural compounds can be made to be located inside the triangle defined by the points P, Q and R shown in FIG. 1.

In other words, even if each of compounds has a conductivity and/or a viscosity out of the above range, a mixture of the compounds is employable as the electro-sensitive movable

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fluid of the invention, as far as the conductivity and the viscosity of the mixture are within the above range, respectively.

For example, a mixture (37) ($\sigma=2.60 \times 10^{-9}$ S/m, $\eta=9.8 \times 10^{-3}$ Pa·s) of 2,2,4-trimethyl-1,3-pentanediol monoisobutyrate (trade name: Kyowanol M, $\sigma=6.80 \times 10^{-8}$ S/m, $\eta=1.2 \times 10^{-2}$ Pa·s) and 2-ethylhexyl palmitate (trade name: Exepal EH-P, $\sigma=2.60 \times 10^{-10}$ S/m, $\eta=9.5 \times 10^{-3}$ Pa·s) in a mixing ratio of 1:4 by weight, each having a conductivity and a viscosity out of the above range, is employable as the electro-sensitive movable fluid. Also, a mixture (38) ($\sigma=4.17 \times 10^{-9}$ S/m, $\eta=5.0 \times 10^{-3}$ Pa·s) of DAM (diallyl maleate, $\sigma=7.8 \times 10^{-7}$ S/m, $\eta=2.5 \times 10^{-3}$ Pa·s) and butyl stearate (trade name: Exepal BS, $\sigma=3.1 \times 10^{-10}$ S/m, $\eta=8.5 \times 10^{-3}$ Pa·s) in a mixing ratio of 1:4 by weight, each having a conductivity and a viscosity out of the above range, is employable as the electro-sensitive movable fluid.

The requisite of the electro-sensitive movable fluid of the invention is that the movable fluid has the above-defined conductivity and viscosity. The conductivity and viscosity mentioned above are measured at room temperature, but these property values are known to vary depending on the measuring temperature. The conductivity and the viscosity defined in the invention are irrespective of the temperature. That is, even the compounds having a conductivity and a viscosity out of the above range at room temperature (25° C.) are employable as the electro-sensitive movable fluids, as far as the conductivity and the viscosity of the compounds are within the above range at their working temperatures, e.g., high temperatures or low temperatures. For example, the compound (15), 2-ethylhexyl benzyl phthalate (trade name: Placizer B-8), has a conductivity σ of 1.10×10^{-8} S/m and a viscosity η of 7.8×10^{-2} Pa·s at room temperature, and even if a direct-current-voltage of 6 kV is applied to the compound at 25° C., the SE type ECF motor or the RE type ECF motor with the compound (25) cannot be driven. To the contrary, a heated product (39) obtained by heating 2-ethylhexyl benzyl phthalate at 100° C., has a conductivity σ of 9.90×10^{-9} S/m and a viscosity η of 3.5×10^{-2} Pa·s (at 100° C.), and therefore the SE type ECF motor or the RE type ECF motor with the heated product (39) can be driven by applying a direct-current-voltage of 6 kV to the product (39).

On the other hand, at room temperature (25° C.), none of the below-described compounds have a conductivity σ and a viscosity η located inside the triangle formed by the points P, Q and R in FIG. 1. Therefore, those compounds cannot drive the SE type ECF motor or the RE type ECF motor at 25° C. when they are used singly.

(2) Tributyl citrate (TBC)

($\sigma=5.71 \times 10^{-7}$ S/m, $\eta=2.0 \times 10^{-2}$ Pa·s)

(3) Monobutyl maleate (MBM)

($\sigma=2.60 \times 10^{-8}$ S/m, $\eta=2.0 \times 10^{-2}$ Pa·s)

(4) Diallyl maleate (DAM)

($\sigma=7.80 \times 10^{-7}$ S/m, $\eta=2.5 \times 10^{-3}$ Pa·s)

(5) Dimethyl phthalate (DMP)

($\sigma=3.90 \times 10^{-7}$ S/m, $\eta=1.2 \times 10^{-2}$ Pa·s)

(7) Ethyl cellosolve acetate

($\sigma=7.30 \times 10^{-8}$ S/m, $\eta=9.0 \times 10^{-4}$ Pa·s)

The image is a screenshot of a patent search application. The main window is divided into two panes. The left pane displays a list of search results, each with a checkbox, a document ID, an issue date, and a page count. The right pane shows a detailed view of a selected patent, including its title, abstract, and a list of claims. The word "EAST" is handwritten in the top left corner of the left pane. The interface includes a menu bar at the top with options like "File", "View", "Edit", "Tools", "Window", and "Help". A toolbar with various icons is located below the menu bar. The bottom of the window features a status bar with information about the current document and search results.